REMARKS

In the last Office Action, the Examiner rejected claims 1, 5, 6, 13 and 17-19 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,125,547 to Nagashima ("Nagashima '547"). Claims 1, 5, 6, 12, 13 and 17-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of Japanese Patent No. 40116340 to Tabata. Claims 1, 5, 6, 9-11, 13-16 and 17-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of U.S. Patent No. 5,431,256 to Wen. Additional art was cited of interest.

In accordance with the present response, independent claims 1 and 13 have been amended to incorporate the subject matter of claims 9-10 and 14-15, respectively, which have been canceled. Non-elected claims 2-4 and 7-8 have been canceled without prejudice or admission and subject to applicants' right to file a continuing application to pursue the subject matter of the non-elected claims. A new abstract which more clearly reflects the invention to which the amended claims are directed has been substituted for the previously submitted abstract.

The amendment to the abstract and claims made herein do not raise new issues requiring further search and/or consideration. Instead, independent claims 1 and 13 have been

amended to incorporate the subject matter of claims 9-10 and 14-15, respectively, which have been canceled, non-elected claims 2-4 and 7-8 have been canceled, and a new abstract which more clearly reflects the invention to which the amended claims are directed has been substituted for the previously submitted abstract, thereby placing the application in condition for allowance or otherwise materially reducing the issues which remain for appeal.

Applicants respectfully request reconsideration of their application in light of the following discussion.

Brief Summary of the Invention

The present invention is directed to a bush cutting machine.

Conventional bush cutting machines include a throttle adjustment unit mounted in a prime mover for adjusting the rotational speed of a cutter blade, and a brake unit provided in a drive power transmission path between the cutter blade and the prime mover for applying a braking force to the cutter blade. In one conventional bush cutting machine, the cutter blade is connected to the prime mover via a clutch and a driven shaft, and a handle supports a brake lever connected via a wire to a brake shoe of the brake unit. When the brake lever is released from a gripped state, the

brake shoe is urged against an outer circumferential periphery of the driven shaft to apply the brakes to the cutter blade.

However, in the foregoing conventional bush cutting machine, an operator is required to perform respective operations of the throttle lever and the brake lever in a timed fashion during a bush cutting operation. For example, the operator must operate the throttle lever in such a manner so as to gradually increase the rotational speed of the cutter blade while gripping the brake lever to gradually release the brakes from the cutter blade, thereby requiring high-skill operation of the levers. Furthermore, since the operator needs not only to perform a lever operation with his hand but also to maintain a specific orientation of the bush cutting machine during a cutting operation, the levers must be desirably operated in the simplest way possible in order to improve workability and minimize fatigue to the operator.

In another conventional bush cutting machine, a cutter blade is connected to the prime mover via a rotary shaft, a handle rod is mounted to an operation rod through which the rotary shaft passes, a brake lever and a throttle lever are both mounted to the handle rod, a brake lever is connected via a wire to a brake section for braking the cutter blade, a throttle lever is connected to a throttle valve mechanism via a wire, and a control box is provided midway of

the wires for linking the wires to one another. The control box includes a control body rotatably secured to a pivot shaft. The wires are connected to respective ends of the control body. In this bush cutting machine, the brake section and the throttle valve mechanism are interlinked through operation of the brake lever. However, the presence of the control box provided midway of the wires complicates the assembly of the control box and the wires. Furthermore, an outer tube disposed between the control box and the throttle lever is subjected to expansion and contraction deformation during operation of the throttle lever. As a result, the outer tube interferes with operation of the bush cutting machine. Moreover, the control box has various components which increase the overall number of parts, and therefore the manufacturing cost, of the bush cutting machine.

The present invention overcomes the drawbacks of the conventional art. Figs. 22-24 and 25-31 show a bush cutting machine 220 according to the present invention embodied in the claims. The bush cutting machine 220 has an operation rod 24 having a front end and a rear end. A cutter blade 22 is mounted to the front end of the operation rod 24 for undergoing rotation. A prime mover (e.g., engine) 21 is mounted to the rear end of the operation rod 24 for rotationally driving the cutter blade 22. A throttle lever

332 is pivotally mounted with respect to the operation rod 24 for controlling an opening degree of a throttle valve of the prime mover 21 to adjust a rotational speed of the cutter blade 22. A brake unit 65 is provided for stopping rotation of the cutter blade 22. A main wire 338 has a first end portion 338b connected to the throttle lever 332 and a second end portion 338a. A throttle wire 343b has a first end portion connected to the throttle valve of the prime mover 21 and a second end portion 343c. A brake wire 344b has a first end portion connected to the brake unit 65 and a second end portion 344c.

A link mechanism is actuated by operation of the throttle lever 332 to adjust the degree of opening of the throttle valve of the prime mover 21 and to release the brake unit 65 from a braking condition. The link mechanism includes a generally U-shaped relay member 345 having a first lug portion 345a connected to the second end portion 338a of the main wire 338 and a second lug portion 345b connected to the second end portion 343c of the throttle wire 343b and the second end portion 344c of the brake wire 344b. The first and second lug portions 345a, 345b form opposite and confronting leg portions of the U-shaped relay member 345.

By the foregoing simplified construction of the bush cutting machine according to the present invention, control of

an opening degree of the throttle valve of the prime mover to adjust the rotational speed of the cutter blade and the application of brakes to stop rotation of the cutter blade are accomplished with high efficiency and a minimum number of parts as compared to conventional bush cutting machines.

Traversal of Prior Art Rejections

Rejection under 35 U.S.C. §102(e)

Claims 1, 5, 6, 13 and 17-19 were rejected under 35 U.S.C. §102(e) as being anticipated by Nagashima '547. Applicants respectfully traverse this rejection and submit that amended independent claims 1 and 13 and dependent claims 5, 6, 17-19 recite subject matter which is not identically disclosed or described in Nagashima '547.

Amended independent claim 1 is directed to a bush cutting machine and requires an operation rod having a front end and a rear end, a cutter blade mounted to the front end of the operation rod for undergoing rotation, a prime mover mounted to the rear end of the operation rod for rotationally driving the cutter blade, a throttle lever pivotally mounted with respect to the operation rod for controlling an opening degree of a throttle valve of the prime mover to adjust a rotational speed of the cutter blade, and a brake unit for stopping rotation of the cutter blade. Amended independent

claim 1 further requires a main wire having a first end connected to the throttle lever, a throttle wire having a first end connected to the throttle valve of the prime mover, and a brake wire having a first end connected to the brake unit. Amended independent claim 1 further requires a link mechanism actuated by operation of the throttle lever to adjust the degree of opening of the throttle valve of the prime mover and to release the brake unit from a braking condition, the link mechanism having a generally U-shaped relay member having a first lug portion connected to the second end of the main wire and a second lug portion connected to the second end of the throttle wire and the second end of the brake wire, the first and second lug portions forming opposite and confronting leg portions of the U-shaped relay member. No corresponding structural combination is disclosed or described by Nagashima '547.

Nagashima '547 discloses a hand-lever device for a trimmer (Fig. 8). An operation stroke amplifying mechanism 40 includes a relay member 41 (i.e., a lever) having leg portions 41A-41C to which each of cables 15, 18 and 68 is respectively connected. However, as recognized by the Examiner, the relay member 41 of Nagashima '547 is not generally U-shaped, as required by independent claim 1. Furthermore, the leg portions 41A-41C of the relay member 41 do not form opposite

and confronting leg portions of a U-shaped relay member, as required by independent claim 1. Stated otherwise, in Nagashima '547, the relay member is generally Y-shaped, not U-shaped. Furthermore, the leg portions 41A-41C of the relay member 41 in Nagashima '547 lie on the same plane and, therefore, do not form opposite and confronting leg portions of a U-shaped relay member.

Amended independent claim 13 similarly distinguishes from Nagashima '547. More specifically, claim 13 requires a generally U-shaped relay member having first and second portions defining confronting leg portions of the U-shaped relay member. No corresponding structure is disclosed or described by Nagashima '547 as set forth above for amended independent claim 1.

In the absence of the foregoing disclosure recited in amended independent claims 1 and 13, anticipation cannot be found. See, e.g., W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) ("Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration"); Continental Can Co. USA v. Monsanto Co., 20 USPQ2d 1746, 1748 (Fed. Cir. 1991) ("When more than one reference is required to establish unpatentability of the

claimed invention anticipation under § 102 can not be found".); Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added) ("Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim").

Stated otherwise, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. This standard is clearly not satisfied by Nagashima '547 for the reasons stated above. Furthermore, Nagashima '547 does not suggest the claimed subject matter and, therefore, would not have motivated one skilled in the art to modify Nagashima '547's hand-lever device to arrive at the claimed invention.

Claims 5, 6 and 17-19 depend on and contain all of the limitations of amended independent claims 1 and 13, respectively, and therefore, distinguish from the reference at least in the same manner as claims 1 and 13.

In view of the foregoing, applicants respectfully request that the rejection of claims 1, 5, 6, 13 and 17-19 under 35 U.S.C. §102(e) as being anticipated by Nagashima '547 be withdrawn.

Rejections under 35 U.S.C. §103(a)

Claims 1, 5, 6, 12, 13 and 17-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of Tabata. Applicants respectfully traverse this rejection and submit that the combined teachings of Nagashima '547 and Tabata do not disclose or suggest the subject matter recited in amended independent claims 1 and 13 and dependent claims 5, 6, 12 and 17-20.

Nagashima '547 does not disclose or suggest the subject matter recited in amended independent claims 1 and 13

as set forth above for the rejection of claims 1, 5, 6, 13 and 17-19 under 35 U.S.C. §102(e).

The secondary reference to Tabata is directed to a control device for an automatic vehicle and has been cited by the Examiner for its teaching of providing a space between the end of a throttle cable and a member that moves it. However, since Tabata does not disclose or suggest the specific structure of the relay member recited in amended independent claims 1 and 13, the reference does not cure the deficiencies of Nagashima '547. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

Claims 5, 6, 12 and 17-20 depend on and contain all of the limitations of amended independent claims 1 and 13, respectively, and therefore, distinguish from the reference at least in the same manner as claims 1 and 13.

In view of the foregoing, applicants respectfully request that the rejection of claims 1, 5, 6, 12, 13 and 17-20 under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of Tabata be withdrawn.

Claims 1, 5, 6, 9-10 (now the subject matter of claim 1), 11, 13, 14-15 (now the subject matter of claim 13) and 16-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of Wen. Applicants respectfully traverse this rejection submit that the combined teachings of Nagashima '547 and Wen do not disclose or suggest the subject matter recited in amended independent claims 1 and 13 and dependent claims 5, 6, 11 and 16-19.

Independent claim 1 has been amended to incorporate the subject matter of claims 9-10 and requires a link mechanism having a generally U-shaped relay member having a first lug portion connected to the second end of the main wire and a second lug portion connected to the second end of the throttle wire and the second end of the brake wire, the first and second lug portions forming opposite and confronting leg portions of the U-shaped relay member. Independent claim 13

has been amended to incorporate the subject matter of claims 14-15 and requires generally U-shaped relay member having a first portion and a second portion disposed opposite the first portion, the first and second portions defining confronting leg portions of the U-shaped relay member. Applicants

The primary reference to Nagashima '547 does not disclose or suggest the subject matter recited in amended independent claims 1 and 13 as set forth above for the rejection of claims 1, 5, 6, 13 and 17-19 under 35 U.S.C. §102(e).

The secondary reference to Wen discloses an adjusting device for a brake cable of a bicycle (Figs. 1-2). The adjusting device has a connector 10 having three leg portions to which each of three wires are connected. The Examiner contends that the connector 10 is a U-shaped element connecting one of the wires (i.e., main wire 101) to two wires (i.e., brake wires 20). The Examiner further contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nagashima '547's hand-lever device by replacing its lever 41 with Wen's connector 10 because the lever 41 of Nagashima '547 and the connector 10 of Wen are considered to be functional equivalents. Applicants respectfully disagree with the Examiner's contentions.

First, contrary to the Examiner's contention, applicants respectfully submit that the connector 10 of Wen is not U-shaped. As shown in Fig. 2 of Wen, the connector 10 has a first portion in which holes 11 are formed for supporting brake wires 20 and a second portion spaced-apart from the first portion by a base portion. The second portion is much longer than the first portion and has an end for supporting the main wire 101. Thus Wen's connector 10 is generally in the form of an L-shape with the first portion extending upwardly from the base to an approximate distance just below a central part of the second portion. Accordingly, the connector 10 in Wen is not U-shaped, and the first and second portions of the connector 10 do not define confronting leg portions of a U-shaped relay member, as required by amended independent claims 1 and 13.

Second, it is unclear how the Examiner proposes to modify Nagashima '547 in view of Wen by replacing Nagashima 547's lever 41 with Wen's connector 10 to render the modified hand-lever of Nagashima '547 operable. In this regard, the mere replacement of Nagashima '547's lever 41 with Wen's connector 10 is insufficient to render the proposed modified hand-lever device of Nagashima '547 operable. More specifically, as recognized by the Examiner, after replacement of Nagashima '547's lever 41 with Wen's connector 10,

Nagashima's throttle wire 17 would somehow have to be redirected in the opposite direction. This is presumably necessary due to the different configurations of Nagashima '547's lever 41 (i.e., the lever 41 is generally Y-shaped) and Wen's connector 10 (i.e., the connector 10 has a modified L-shaped structure). The Examiner merely proposes the further use of a pulley or similar structure for the purpose of redirecting the throttle wire 17. However, it is unclear how such pulley or similar structure would be incorporated into Nagashima 547's hand-lever device and how such pulley or similar structure would interact with Wen's connector 10 and other components of Nagashima '547's hand-lever device to render the same operable. Moreover, there is no teaching basis in the two reference to guide one skilled in the art to use a pulley or similar structure in the manner proposed.

Furthermore, the Examiner has not provided an evidentiary basis establishing the obviousness of incorporating such pulley or similar structure into Nagashima '547's hand-lever device. In this regard, the Examiner has neither cited a reference which directly establishes this obviousness, nor set forth a line of reasoning consistent with and motivated by the cited art establishing that such modification would have been obvious. There must be some

teaching, reason, suggestion, or motivation found in the prior art references to make a combination which renders an invention obvious within the meaning of 35 U.S.C §103. See, e.g., Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d 982, 989, 18 USPQ2d 1885 (Fed. Cir. 1991). One of ordinary skill in the art would not have been led to modify Nagashima '547 in view of Wen in the manner proposed by the Examiner in the statement of rejection. The only basis for the modification urged by the Examiner in the rejection is applicants' own disclosure, and such hindsighted rejections are improper. See, for example, Diversitech Corp. v. Century Steps, Inc., 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); In re Geiger, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); Panduit Corp. v. Dennison Manufacturing Co., 227 USPQ 337, 343 (Fed. Cir. 1985); Interconnect Planning Corp. v. Feil, 227 USPQ 543, 551 (Fed. Cir. 1985).

Third, while acknowledging that Nagashima '547 fails to disclose the specific structure of the relay member recited in dependent claims 9-10 and 14-15, now the subject matter of amended independent claims 1 and 13, respectively, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was to modify Nagashima '547 by replacing the lever 41 with the connector 10 of Wen because the lever 41 disclosed by

Nagashima '547 and the connector 10 disclosed by Wen are functional equivalents. Applicants respectfully disagree with the Examiner's contention.

In holding that the mere existence of functional equivalence does not establish obviousness, the court in In re Scott, 139 USPQ 297, stated:

> We disagree with the supposed logic of the Patent Office position. The examiner and the board appear to hold that the mere existence of "functional and mechanical equivalence" establishes "obviousness." Expedients which are functionally equivalent to each other are not necessarily obvious in view of one another. The statutory mandate of 35 U.S.C. 103 is that the claimed subject matter be unobvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. 139 USPQ 297, 299.

Moreover, the Court in In re Flint, 141 USPQ 299 (CCPA 1964), and In re Edge, 149 USPQ 556, 557 (CCPA 1966), considered the holding in In re Scott dispositive in also holding that the mere existence of functional equivalence does not establish obviousness.

In the instant case, even assuming that Wen's connector 10 is U-shaped as required by amended independent claims 1 and 13, there is no basis for the Examiner's holding that the lever 41 disclosed by Nagashima '547 is the functional equivalent of the connector 10 disclosed by Wen.

This is particularly so in light of the Examiner's recognition that after replacement of Nagashima '547's lever 41 with Wen's connector 10, Nagashima's throttle wire 17 would somehow have to be redirected in the opposite direction by some additional structure (e.g., a pulley or the like) which does not form part of either Nagashima '547's lever 41 or Wen's connector 10. Stated otherwise, the lever 41 of Nagashima '547 and the connector 10 of Wen cannot be functional equivalents if, after the connector 10 is somehow incorporated into Nagashima '547's hand-lever device, the connector 10 cannot perform the same function as the lever 41 unless the additional structure for redirecting the throttle wire 17 of Nagashima '547 is also incorporated into Nagashima '547's hand-lever device. Thus such equivalence between Nagashima '547's lever 41 and Wen's connector 10 propounded by the Examiner is not obvious and the Examiner has cited no evidence that the prior art recognized the two structures to be functionally equivalent. See, Ex parte Panagrossi et al., 288 USPQ 287, 288 (Bd. App. 1960).

Fourth, the proposed combination of Nagashima '547 and Wen is improper because the prior art teaches away from the claimed combination. A reference teaches away when a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent

from the path that the applicant took. In re Gurley, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). Stated otherwise, a reference teaches away if it suggests that the line of development falling from the reference's disclosure is unlikely to be productive of the result sought by applicants. W.L. Gore & Assocs. v. Garlock, Inc., 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984); In re Caldwell, 138, USPQ 243, 245 (CCPA 1969) (reference teaches away if it leaves the impression that the product would not have the properties sought by the applicant).

In this case, the prior art teaches away from the claimed combination because Nagashima '547 is specifically concerned with the reduction in size and weight of the hand-lever device and with improving the working conditions and operability of the hand-lever device (col. 2, lines 64-67). In contrast, by the Examiner's proposed modification of Nagashima '547 in view of Wen, the replacement of Nagashima '547's lever 41 with Wen's connector 10 additionally requires the use of a pulley or similar structure for the purpose of redirecting the throttle wire 17 of Nagashima '547 as discussed above. Such additional pulley or similar structure would tend to increase the overall size and weight of Nagashima '547's hand-lever device, which is contrary to the

express teaching in Nagashima '547 of desiring to reduce the size and weight and improve the working conditions and operability of the hand-lever device. Thus, contrary to the Examiner's contention, one of ordinary skill in the art at the time the invention was made would not have been led by the teachings of Nagashima '547 and/or Wen to replace Nagashima '547's lever 41 with Wen's connector 10 and to further incorporate the additional structure for redirecting the throttle wire 17 of Nagashima '547 as set forth above.

Thus the amended claims are not rendered obvious by the teachings of Nagashima '547 and Wen because the references do not suggest the modifications that would be needed to replicate the claimed invention. In the context of obviousness rejections based upon the purported obviousness of effecting a required modification, the Federal Circuit has held that "[t]he mere fact that the prior art may be modified in [a given] manner ... does not make the modification obvious unless the prior art suggested the desirability of the modification". In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). There is nothing in Wen that would have suggested modifying the structure of the hand-lever device of Nagashima '547 to achieve the bush cutting machine discussed above and recited by amended independent claims 1 and 13.

Claims 5, 6, 11 and 16-19 depend on and contain all of the limitations of amended independent claims 1 and 13, respectively, and therefore, distinguish from the reference at least in the same manner as claims 1 and 13.

In view of the foregoing, applicants respectfully request that the rejection of claims 1, 5, 6, 9-10 (now the subject matter of claim 1) 11, 13, 14-15 (now the subject matter of claim 13) and 16-19 under 35 U.S.C. §103(a) as being unpatentable over Nagashima '547 in view of Wen be withdrawn.

The amendment to the abstract and claims made herein do not raise new issues requiring further search and/or consideration. Instead, independent claims 1 and 13 have been amended to incorporate the subject matter of claims 9-10 and 14-15, respectively, which have been canceled, non-elected claims 2-4 and 7-8 have been canceled, and a new abstract which more clearly reflects the invention to which the amended claims are directed has been substituted for the previously submitted abstract, thereby placing the application in condition for allowance or otherwise reducing the issues which remain for appeal.

In view of the foregoing amendments and discussion, the application is now believed to be in condition for allowance. Accordingly, entry of this amendment and favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

ADAMS & WILKS
Attorneys for Applicants

By: _____
Bruce L. Adams
Reg. No. 25,386

50 Broadway
31st Floor
New York, NY 10004
(212) 809-3700

ABSTRACT OF THE DISCLOSURE

A bush cutting machine has an operation rod having a front end and a rear end. A cutter blade is mounted to the front end of the operation rod for undergoing rotation. A prime mover is mounted to the rear end of the operation rod for rotationally driving the cutter blade. A throttle lever is pivotally mounted with respect to the operation rod for controlling an opening degree of a throttle valve of the prime mover to adjust a rotational speed of the cutter blade. A brake unit is provided for stopping rotation of the cutter blade. A main wire has a first end portion connected to the throttle lever and a second end portion. A throttle wire has a first end portion connected to the throttle valve of the prime mover and a second end portion. A brake wire has a first end portion connected to the brake unit and a second end portion. A link mechanism is actuated by operation of the throttle lever to adjust the degree of opening of the throttle valve of the prime mover and to release the brake unit from a braking condition. The link mechanism includes a generally U-shaped relay member having a first lug portion connected to the second end portion of the main wire and a second lug portion connected to the second end portion of the throttle wire and the second end portion of the brake wire. The first and second lug portions form opposite and confronting leg portions of the U-shaped relay member.